

Speeding up random walks.

Colin Cooper
King's College London
colin.cooper@kcl.ac.uk

21st January 2011

The cover time of a graph by a random walk, is the expected time for the walk to visit all vertices of the graph, from the worst case starting position.

We consider strategies that can be used to speed-up the cover time of a random walk on undirected connected graphs.

The price of this speed up is normally some extra work that can be performed locally by the walk or by the vertices of the graph.

Possible strategies include:

- Biased walk transitions
- Use of previous history
- Local exploration of the graph

We present some established and recent results for various classes of graphs. The talk also discusses methodology, and suggests some directions for future work.